

On the inverse type of argument linking

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For the matter of disambiguation, the two settings of transitive verbs (1a,b) must be expressed differently in every language, and they must be distinguishable from intransitive verbs.

- (1) Transitive verbs c. Intransitive verbs
- | | | | | | | | | | | | | | | |
|---|-------------|-------------|-----------|---|---|--|--|-------------|-------------|-----------|---|---|--|---|
| <p>a. <i>I saw him.</i></p> <p style="text-align: center;">direct setting</p> <table style="margin-left: auto; margin-right: auto;"> <tr> <td>λy</td> <td>λx</td> <td>VERB(x,y)</td> </tr> <tr> <td>3</td> <td>1</td> <td></td> </tr> </table> | λy | λx | VERB(x,y) | 3 | 1 | | <p>b. <i>He saw me.</i></p> <p style="text-align: center;">inverse setting</p> <table style="margin-left: auto; margin-right: auto;"> <tr> <td>λy</td> <td>λx</td> <td>VERB(x,y)</td> </tr> <tr> <td>1</td> <td>3</td> <td></td> </tr> </table> | λy | λx | VERB(x,y) | 1 | 3 | | <p><i>I went I stumbled</i></p> <p style="text-align: center;">λx VERB(x)</p> <p style="text-align: center;">1</p> |
| λy | λx | VERB(x,y) | | | | | | | | | | | | |
| 3 | 1 | | | | | | | | | | | | | |
| λy | λx | VERB(x,y) | | | | | | | | | | | | |
| 1 | 3 | | | | | | | | | | | | | |
- (2) a. Person hierarchy (Salience)
 local > nonlocal “Local person {1,2} is more salient than nonlocal person (3).”
 1 > 3
- b. Max(person) “Realize person.”
- c. Personal affixes
 Every language has pronouns (or pronominal affixes) for local person, but not necessarily for nonlocal person.
 Expressivity: Max(local) » Max(nonlocal)
 Markedness: *(nonlocal) » *(local)
- d. The simplest type:
 *(nonlocal) » Max(person) “Realize person unless it is nonlocal.”
 If there is only one set of pronominal affixes, the settings in (1) cannot be distinguished.

There are various ways to improve this undesired situation.

- (3) The **Active type**: Two sets of pronominal affixes: active vs. inactive, provided that there is a corresponding split in intransitive verbs. Agent (+contr) is differently marked from Nonagent. (Example: Carib languages, Derbyshire 1999)

<i>direct setting</i>	<i>inverse setting</i>	<i>intransitives</i>	
λy λx VERB(x,y)	λy λx VERB(x,y)	λx VERB(x)	λx VERB(x)
Ag	Ag	Ag	
3 1	1 3	1	1
active	inactive	active	inactive

Semantically based. Raises problems for the classification of verbs. The intransitive split is to a great extent lexicalized (e.g., in Cherokee (Iroquoian), Scancarrelli 1987)

- (4) The **Portmanteau type**: Two sets of portmanteau morphemes, alongside with simple morphemes (Australian languages, American Indian languages):

<i>direct setting</i>	<i>inverse setting</i>	<i>intransitives</i>
λy λx VERB(x,y)	λy λx VERB(x,y)	λx VERB(x)
Ag	Ag	
3 1	1 3	1
1→3	3→1	simple

Listing of all possible pairs is a costly solution.

(9) However, ACC and ERG cannot be combined in one verb form of Straits Salish:

- a. k^wəniŋ-t -oŋəs =lə =sən 'I helped you'
 help-TRANS -loc.ACC =PAST=1.NOM
- b. k^wəniŋ-t =lə =sən 'I helped him'
 help-TRANS =PAST=1.NOM
- c. k^wəniŋ-t -s =lə 'He helped him'
 help-TRANS -3.ERG =PAST
- d. *k^wəniŋ-t -oŋəs -əs =lə 'He helped me'
 help-TRANS -loc.ACC -3.ERG=PAST
- e. k^wəniŋ-t -ŋ =lə =sən 'I was helped'
 help-TRANS -PASS =PAST=1.NOM

All inverse settings with a local person must be expressed in the passive (possibly because only one personal suffix can follow the verb). (See inverse gaps in (18).)

(10) The **Inverse type** encodes the salience hierarchy in a transitive verb (rather than using salience values as the context for case). Conversely to split case, salience is here realized in the context of abstract case. This ingenious solution in its pure form is only found in the Algonquian languages (but with many lexicalized forms, especially in the dependent, so-called conjunct clauses).

- a. Salience features: [+hs] 'there is a more salient argument'
 [+ls] 'there is a less salient argument'
- b. Direct voice: [+hs]/+hr or [+ls]/+lr (=harmonic alignment)
 Inverse voice: [+hs]/+lr or [+ls]/+hr (=disharmonic alignment)

(11) *Plains Cree* (Wolfart 1981, Fabri 1996; see also Wunderlich 1996 on Potawatomi)

- a. Ni -seekih -aa -naan atim.
 1 -scare -DIRECT -1pl dog
 'We scare the dog'
- b. Ni -seekih -iko -naan atim
 1 -scare -INVERSE -1pl dog
 'The dog scares us'

(12) *Harmonic alignment* in the inverse type:

- a. +ls > +hs Salience hierarchy (1 > 3)
 +hr > +lr The morphological marking by [+hr] is more effective than that by [+lr].
- b. Salience in the context of abstract case
 +ls/+hr > +ls/+lr
 +hs/+lr > +hs/+hr
- c. Markedness hierarchies
 *(+ls)/+hr » *(+ls)/+hr Direct voice is more marked (less likely) than
 *(+hs)/+hr » *(+hs)/+hr indirect voice.
- d. A language with both direct and inverse markers:
 Max(+ls) » *(+ls)
 or Max(+hs) » *(+hs)
- A language with inverse marker only:
 *(+ls)/+lr » Max(+ls)
 or *(+hs)/+hr » Max(+hs)

A language may have lost inverse voice and still exhibit inverse morphology.

- (13) Consider the Tanoan languages (North Arizona, New Mexico; Klaiman 1993): Both *Tiwa* and *Towa* have an inverse marker but no case, although they have more than one set of personal affixes, distinguished by whether the nonlocal argument is singular or plural, animate or inanimate. Tiwa, however, exhibits a further distinction between

ta- 1sg intransitive or transitive inverse (NOM)
ti- 1sg transitive direct (SAL)

Arizona Tewa (another Tanoan language) differs: it has no inverse marker, but both accusative and salience case (moreover, as all Tanoan languages, an oblique marker in the inverse case).

- (14) **Salience case** realizes the higher person on the higher argument; Arizona Tewa:

a. Ne'i kwiyó ná: -tay
 this woman 2sg.SAL -know
 'You know this woman'
 b. Ne'i kwiyó -di wó: -tay
 this woman-OBL 2sg.ACC -know
 'This woman knows you'

- (15) Salience case can neither be equated with active, nor with ergative.
 a. It cannot be an active marker because there is no intransitive split.
 b. It cannot be an ergative case because ergative has to include a 3rd person, but 3sg is lacking in Tewa. Moreover, Tiwa gives evidence that this case starts with 1sg.

<i>direct setting</i>		<i>inverse setting</i>		<i>intransitives</i>
λy	λx VERB(x,y)	λy	λx VERB(x,y)	λx VERB(x)
+hr	+lr	+hr	+lr	-hr,-lr
3	1	1	3	1
	+ls		+hs	
	SAL	ACC	obl	NOM

- (16) Salience case is simply [+ls], but restricted to the direct setting. It is similar to the active marking insofar as an element of the (more natural) direct setting is marked. In this constellation, the following scales are relevant:

- a. Scales: +ls > +hs
 +lr > +hr
 b. Markedness hierarchy:
 *(+ls)/+hr » *(+ls)/+lr Salience case is more marked for a lower than a higher argument.
 c. Tewa:
 *(+ls)/+hr » Max(+ls) Realize salience case except for the lower argument.

Consequently, there is some chance that the salience case will develop to an ergative.

- (17) Possible reinterpretations:

b. inverse voice	→ inactive marking		accusative case	→ passive voice
b. direct voice	→ active marking		salience case	→ ergative case

- (18) **Gaps for inverse settings.** The salience features are relevant in order to explain gaps.
- All Tanoan languages realize the less salient argument of the inverse setting by oblique marking in the syntax (which is, as Klaiman has argued, not a passive); in other words, they exhibit a gap in the set of structural arguments.
 - $*(\text{arg}_{\text{dir}})/(+\text{hs})/+\text{lr} \gg \text{Max}(\text{arg}_{\text{dir}})$ Realize all arguments structurally except in those instances where the lower salience is coupled with the higher argument role.
- (19) **Operations restricted to inverse settings: Agent Focus in *Tzotzil*** (Mayan), which only applies in inverse 3→3 settings (Aissen 1999b).
All Mayan languages exhibit Agent Focus (AF) where the Agent (the higher argument) is focused and extracted from the transitive VP, yielding the structure
- NP_{+FOC} [CP [VP V-NOM_i NP_i _] rather than [VP V-NOM_i-ERG_k NP_i NP_k]
 - The AF morpheme [+FOC]/+lr assigns [+FOC] to the higher argument role.
 - $*(+\text{lr})/+\text{FOC}$ Do not realize ergative on a focused argument.
 - $*(\text{arg}_{+\text{FOC}})/\text{VP} \gg \text{Max}(\text{arg}_{+\text{FOC}})$ A focused argument must be extracted from VP. (see also Stiebels 2000b)
- Some Mayan languages have obligatory AF for every higher argument (Jakalteq, Ixil, K'iche', Tz'utujil).
 - Tzotzil, however, requires Agent Focus only when the less salient argument is associated with the higher argument role, and both arguments are 3rd person.
Here, the AF morpheme is restricted to [+FOC]/(+hs_{-loc})/+lr
 - There are also Mayan languages in which AF has an antipassive effect (Mam, Q'eqchi), so $*(+\text{lr})/+\text{FOC}$ is automatically satisfied.
 - AF in Jakalteq (type a) Tzotzil (type b) Mam (type c)
- | | | | | | | | | |
|-------------|-------------|-----------|-------------|-------------|-----------|-------------|-------------|-----------|
| λy | λx | VERB(x,y) | λy | λx | VERB(x,y) | $\exists y$ | λx | VERB(x,y) |
| +hr | +lr | | +hr | +lr | | +hr | +lr | |
| | +FOC | | 3 | +hs | | | | +FOC |
| | | | | +FOC | | | | |
- There is some evidence that AF originally was an inverse morpheme (there are two such morphemes, dependent on whether local person is involved or not), and was then reinterpreted as [+foc]; only Tzotzil preserved the inverse context.
 - Navajo (Athabaskan) is another language with inverse marking only in 3→3 sett.
- (20) AF in *Tzotzil* (CP=completive aspect, FC=final clitic)
- Vo'on i-j-kolta. 'It was me who helped him'
1sg CP-1.ERG-help
 - Li antz i-kolta-on li petul-e. 'It was the woman who helped Pedro'
the woman CP-help-AF the Pedro-FC

There are two interesting corollaries for inverse languages:

- The obvious need for distinguishing salience in every transitive setting (which seems to have become a disadvantage).
 - 1→2 and 2→1 cannot be expressed alike, one person must be the higher one.
Algonquian languages: a further pair of direct/inverse voice markers (with 2 > 1).
Many American Indian languages: Portmanteau forms for at least one of these settings. ⇒ Many idiosyncratic asymmetries (including so-called morphological taboos) seem to have survived even in languages that do not be inverse any more.

- b. In the setting $3 \rightarrow 3$ (where both are human or animate), one person must be the lower one (the obviative), so that $3 \rightarrow 3_{obv}$ and $3_{obv} \rightarrow 3$ can be distinguished. (Under certain circumstances, $3_{obv} \rightarrow 3_{obv}$ is allowed, but never $*3 \rightarrow 3$.) The less salient argument is marked by obviative in such a case.

(21) Local person in Plains Cree:

- a. ki-waapam-i-naan ‘We see you (sg/pl)’
2-see-DIRECT-1pl
b. ki-waapam-i-naan ‘You (sg/pl) see us’
2-see-INVERSE-1pl

(22) Obviative in Plains Cree (Wolfart 1981:30)

- a. waapam-eew naapeew siisiip-a ‘The man sees the duck (obv)’
see-DIRECT man duck-OBV
b. waapam-ik naapeew siisiip-a ‘The duck (obv) sees the man’
see-INVERSE man duck-OBV
c. waapam-eew naapeew-a siisiip ‘The duck sees the man (obv)’
see-DIRECT man-OBV duck
d. waapam-ik naapeew-a siisiip ‘The man (obv) sees the duck’
see-INVERSE man-OBV duck

- (23) a. *direct setting* *inverse setting*
 $\lambda y \quad \lambda x \text{ VERB}(x,y)$ $\lambda y \quad \lambda x \text{ VERB}(x,y)$
 +hr +lr +hr +lr
 3obv 3 3 3obv
 +hs +hs
 DIRECT INVERSE

b. Obviative marking on the lower syntactic argument may have been reinterpreted as accusative case on independent nouns.

c. One also finds obviative agreement between the verb and its syntactic argument.

2. The reference to person (rather than abstract case) allows reference-tracking across clause boundaries (especially when obviative marking is involved). Note that other cross-referencing systems relating subordinated and main clause (‘same subject’ vs. ‘different subject’) can easily be established from this person-related concept by re-interpretation.

(24) Coreference with a possessor in Plains Cree (Wolfart 1981: 26)

Note the difference between *o-stees-a* ‘his_{obv} older brother’ and *o-stees-iyiw* ‘his_{obv} older brother’. prox(imate) indicates the non-obviative person.

- a. caan waapam-eew o-stees-a w-iik-ihk
John see-DIRECT [3-brother]-OBV 3-house-at
‘John_{prox} saw his_{prox} older brother_{obv} at his_{prox} house’
a. caan waapam-eew o-stees-a w-iik-iy-ihk
John see-DIRECT [3-brother]-OBV 3-house-OBV.POSS-at
‘John saw his older brother_{obv} at his_{obv} house’

(25) Coreference with an argument of the dependent clause in Plains Cree (Wolfart: 26)

- a. naapeew atimw-a waapam-eew ee-sipweehte-t
 man dog-OBV see-DIRECT CONJUNCT-leave-3
 ‘The man_{prox} saw the dog as he_{prox} left’
- b. naapeew atimw-a waapam-eew ee-sipweehte-yit
 man dog-OBV see-DIRECT CONJUNCT-leave-3OBV
 ‘The man saw the dog_{obv} as he_{obv} left’

(26) Coreference with a possessor in Tzotzil (the possessor is more salient than the head)

- a. s-vixtak i-s-kolta. (direct)
 3-ERG-sisters CP-3.ERG-help
 ‘It was her_{prox} sisters_{obv} that she_{prox} helped’
- b. s-vixtak i-kolta-on. (inverse)
 3.ERG-sisters CP-help-AF
 ‘It was her_{prox} sisters_{obv} who helped her_{prox}’ (Aissen 1999b:474)

Conclusions and Speculations

Inverse systems are ingenious in reference-tracking, but have some disadvantages:

- are computationally complex (need relative salience features rather than absolute person values),
- require salience differences even when they are not obvious,
- block certain generalizations over similar settings,
- can distinguish syntactic arguments only indirectly.

Inverse(-like) systems, as found in many languages today:

- are often mixed and redundant systems,
- have many portmanteau or lexicalized forms,
- are often merged with active type sets of affixes,
- have often acquired in addition a case system (which mostly is a split system),
- often exhibit gaps or specialized operations in the realization of inverse settings.

Inverse systems are exclusively found in languages with rich morphology:

- inverse voice requires head-marking, whereas case marking is not restricted to heads

The inherent logic of inverse systems (based on complementary input settings) offers a melting-pot for the evolution of several languages types:

- inheres already number (and obviative) agreement,
- enables case systems by reinterpretation,
- enables passive by reinterpretation,
- enables cross-references between main and dependent clause,
- nearly every type of language is compatible with (redundant) inverse marking.

- There is a lot of evidence that inverse systems may have developed into case systems.
- There is no indication that a case system ever has developed into an inverse system.
- An inverse system requires to mark relative salience in the context of abstract case. (computationally more complex)
- A case system requires to mark abstract case in the context of specific salience features. (computationally simpler, has advantages in the syntax)

Is there a unidirectional way in the evolution of languages?

- Inverse marking can only be realized by morphology. Inverse-marking systems have disadvantages in the syntax, but they offer several alternative ways for distinguishing arguments also by case. Many languages with rich morphology show relics of inverse-marking when they realize certain features/arguments only in a direct or inverse setting, respectively.
- Case marking can be realized by morphology or syntax. Case-marking systems have advantages in the syntax, but do not offer any ways to introduce inverse marking.
- There may be some historical exchange between the active and the inverse type, possibly in both directions. However, active-type languages have disadvantages in the syntax, too. It is unlikely that a case system will develop to an active-type system.

Hypothesis

- Morphology is older than syntax.
- Inverse systems play a major role in the transition to syntax.
- There is no need for morphology. Once syntax was created, morphology (of the kind one finds in the inverse-type and active-type languages) wasn't needed anymore. (Though, it still exists in many of the now endangered rich-morphology languages.)

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